U. S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
CALIFORNIA FOREST AND RANGE EXPERIMENT STATION
Division of Forest Insect Research

FOREST INSECT CONDITIONS
MT. SHASTA BRUSHFIELD PLANTATION
SHASTA-TRINITY NATIONAL FOREST
MAY 1957
APPRAISAL SURVEY

Introduction

Late in the fall of 1956, the Shasta-Trinity National Forest reported a reproduction weevil infestation in pine plantings in a brushfield near Mt. Shasta. Additional information concerning this infestation, including locations where weevil damage had been observed, was supplied in a detection report submitted to the Station by J. L. Averell, Regional Office, U. S. Forest Service, on April 17, 1957. To obtain some indication of the seriousness of the damage, R. E. Stevens and C. B. Eaton reconnoitered the eastern portion of the plantation (the area specifically mentioned by Averell) on April 19. This examination was followed by a more comprehensive reconnaissance, including some sampling, which was made by B. E. Wickman and R. C. Hall on May 2.

The Mt. Shasta brushfield plantings have sustained severe weevil damage on previous occasions. The last outbreak serious enough to warrant control occurred in 1952 when an area of 2,000 acres was treated with DDT to check the damage. Since that time the plantations have been kept under surveillance. Up until the latter part of 1956 there was no indication that an upward trend in the infestation was taking place. This report summarizes the results of surveys of this most recent outbreak.

Host and Insect Species

The tree species affected are ponderosa and Jeffrey pine. These species have been planted on an extensive scale in the Mt. Shasta brushfield. Although the trees originally were started in rows which had been cleared of competing brush, the brush in most cases has once again encroached upon the rows, so that the trees appear to be suffering keenly from brush competition.

The insect that is causing the principal damage is the pine reproduction weevil, Cylindrocopturus eatoni Buch. This weevil has killed many of the young trees outright, but in some cases it has killed only the tops. The work of two other insects also was noted. One of these is the ponderosa pine resin midge, Retinodiplosis sp. This insect is a twig killer. In local areas it is present in tremendous numbers, and is causing a good deal of "flagging." Also observed commonly were the eggs of sawflies (probably Neodiprion sp.) in the foliage of the trees. There was very little evidence of feeding by sawflies last year, and there is not much reason to believe that the presence of eggs this spring portends an outbreak. On the other hand, sawflies are known to be troublesome pests of pine plantations at times, and although they have not yet become serious in this area it is possible that an infestation of outbreak proportions is in the making.

Current Status of Reproduction Weevil

In their reconnaissance Stevens and Eaton found that a fairly serious weevil infestation existed. Many trees up to 6 feet tall were observed to be infested, and the weevil broods, which then were in the late larval stage, were heavy. The infestation appeared to be generally distributed throughout the plantation, wherever suitable host trees occurred. In some areas, however, damage was much heavier than in others.

These observations were substantiated in the survey made later by Hall and Wickman. The latter traversed all of the roads in the entire plantation, made observations on the occurrence of dead trees as seen from the back of a pickup truck, and thus determined the area of damage. This area is located in section 27 and 34 (figure 1), and is about 400 acres in size. In 10 different areas samples were taken, totalling altogether 1,042 trees. Counts were made of the number of trees living, number infested in 1956, and the number older dead (where the remnants could still be discerned). The data are summarized in Table 1. Of the total living and dead in these samples, 42.4 percent were killed by weevils. About 136 trees, or 13.1 percent this total were currently infested. The remainder were older kills. Mortality in the 10 areas ranged from 7 to 50 percent. The outbreak was found to be most serious in portions of the plantation established between 1938 and 1942, and losses greatest in areas where survival ranged from good to very good. Over the entire planted area weevil-caused losses probably average somewhat less than is indicated by these findings. Nevertheless the infestation appears to be very aggressive.

Table 1.--Pine reproduction weevil damage in pine plantings at Mt. Shasta brushfield

Condition	Total Trees in Samples	
	Number	Percent
Uninfested	600	57.6
Infested	136	13.1
Older dead	306	29.3
Total	1042	100.0

Control

Good results have been obtained in controlling the pine reproduction weevil in the Mt. Shasta brushfield and elsewhere with aerial applications of DDT spray. If control is considered advisable, we suggest that this method be used. A dosage of 1 pound of DDT per gallon of diesel oil and auxiliary solvent per acre is recommended. The application should be timed to control the adults after they have emerged from their pupal cells, but before they have had an opportunity to lay their eggs. Ordinarily oviposition does not begin until mid-June. The date when spraying begins should be determined according to insect development.

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Figure 1

Pine Reproduction Weevil

Infestation - 1957

Mt. Shasta City Planting Project

Area of major damage